

Model Toxics Control Act Cleanup Regulation



Remedy Selection

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Toxics Cleanup Program

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Model Toxics Control Act Cleanup Regulation



Minimum Requirements for Cleanup Actions

Model Toxics Control Act Cleanup Regulation



Minimum Requirements for Cleanup Actions

THRESHOLD REQUIREMENTS

- ❖ Protect human health and the environment
- ❖ Comply with cleanup standards
 - See WAC 173-340-720 through 760
- ❖ Comply with applicable state and federal laws
 - See WAC 173-340-710
- ❖ Provide for compliance monitoring
 - See WAC 173-340-410 and 173-340-720 through 760

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Minimum Requirements for Cleanup Actions

OTHER REQUIREMENTS

- ❖ Use permanent solutions to the maximum extent practicable
→ See WAC 173-340-360(3)
- ❖ Provide for a reasonable restoration time frame
→ See WAC 173-340-360(4)
- ❖ Consider public concerns
→ See WAC 173-340-600

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Minimum Requirements for Cleanup Actions

SITE-SPECIFIC REQUIREMENTS

- ❖ Requirements for Ground Water Cleanup Actions
→ See WAC 173-340-360(2)(c)
- ❖ Requirements for Soil Cleanup Actions for Residential Areas, Schools and Child Care Centers
→ See WAC 173-340-360(2)(d)
- ❖ Requirement of Institutional Controls;
Requirements for Cleanup Actions that use Institutional Controls
→ See WAC 173-340-360(2)(e) and 173-340-440

Model Toxics Control Act Cleanup Regulation



Minimum Requirements for Cleanup Actions

SITE-SPECIFIC REQUIREMENTS

- ❖ Requirement to prevent or minimize present or future releases and migration of hazardous substances
→ See WAC 173-340-360(2)(f)
- ❖ Requirements for Cleanup Actions that use Dilution and Dispersion
→ See WAC 173-340-360(2)(g)
- ❖ Requirements for Cleanup Actions that use Remediation Levels
→ See WAC 173-340-360(2)(h)

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Protection of Human Health and the Environment

WAC 173-340-360(2)(a)(i)

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Minimum Requirements for Cleanup Actions

PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

- ❖ Cleanup actions that (1) achieve cleanup levels at the point of compliance AND (2) comply with applicable state and federal laws are presumed to be protective of human health and the environment.
→ See WAC 173-340-702(5)
- ❖ Quantitative site-specific risk assessments (human health or ecological) may be conducted to help determine whether a cleanup action is protective of human health or the environment.
→ See WAC 173-340-357

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Minimum Requirements for Cleanup Actions

PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

- ❖ **How may one conduct a quantitative site-specific human health risk assessment?**

The standard equations in the regulation may be used.

The default values for specified input parameters may be modified as provided under modified Method B and Method C.

The RME scenario and the default values for the exposure parameters may also be modified for the purpose of this assessment. See WAC 173-340-708(3)(d) and (10)(b).

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Compliance with Cleanup Standards

WAC 173-340-360(2)(a)(ii)



WAC 173-340-700 through -760

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Minimum Requirements for Cleanup Actions

COMPLIANCE WITH CLEANUP STANDARDS

❖ What is a cleanup standard?

A cleanup standard consists of the following:

- (1) a protective concentration (**cleanup level**); AND
- (2) the location within the contaminated medium where the cleanup level must be met (**point of compliance**).

May also consist of applicable state and federal requirements.

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Minimum Requirements for Cleanup Actions

COMPLIANCE WITH CLEANUP STANDARDS

- ❖ Does the cleanup action alternative achieve cleanup levels at the point of compliance?
- ❖ If not, does the cleanup action alternative involve soil containment? If so, does the cleanup action alternative meet the requirements in WAC 173-340-740(6)(f)?

Where a cleanup action alternative involves **containment of soils** with hazardous substance concentrations exceeding cleanup levels at the point of compliance, **the cleanup action alternative may be determined to comply with cleanup standards, provided the requirements in WAC 173-340-740(6)(f) are met.**

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Compliance with Applicable State and Federal Laws

WAC 173-340-360(2)(a)(iii)



WAC 173-340-710

Model Toxics Control Act Cleanup Regulation



Minimum Requirements for Cleanup Actions

COMPLIANCE WITH APPLICABLE STATE AND FEDERAL LAWS

- ❖ Legally Applicable Requirements
- ❖ Relevant and Appropriate Requirements
 - (1) To determine whether a requirement is relevant and appropriate, the requirement must be **evaluated using the criteria specified in the rule.**
 - (2) The rule specifies several requirements in WAC 173-340-710 through 760 that must be considered as relevant and appropriate requirements for establishing cleanup standards.

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Minimum Requirements for Cleanup Actions

COMPLIANCE WITH APPLICABLE STATE AND FEDERAL LAWS

❖ **Permits and Exemptions -- Independent Remedial Actions**

Independent remedial actions must obtain permits required by other federal, state and local laws.

❖ **Permits and Exemptions -- Formal Oversight**

Remedial actions conducted under formal oversight are exempt from the procedural requirements of certain laws (specified in the rule), **BUT still must comply with the substantive requirements** of these laws. Ecology must ensure compliance and provide an opportunity for comment by the public and by the state agencies and local governments that would otherwise implement these laws.

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Permanent to the Maximum Extent Practicable

WAC 173-340-360(2)(b)(i)



WAC 173-340-360(3)

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Minimum Requirements for Cleanup Actions

PERMANENT TO THE MAXIMUM EXTENT PRACTICABLE

- ❖ **How does one determine whether a cleanup action uses permanent solutions to the maximum extent practicable?**

The “[disproportionate cost analysis](#)” specified in the rule is used to determine whether a cleanup action uses permanent solutions to the maximum extent practicable.

The cleanup action alternative that is PMEP is the most permanent cleanup action alternative whose incremental costs do not exceed the incremental benefits, compared to less permanent alternatives.

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Minimum Requirements for Cleanup Actions

PERMANENT TO THE MAXIMUM EXTENT PRACTICABLE

❖ **When is a disproportionate cost analysis not required?**

A disproportionate cost analysis is NOT required IF:

- (1) The cleanup action is permanent;
- (2) The cleanup action is agreed to by Ecology and the PLPs; AND
- (3) The cleanup action is identified by Ecology as the proposed cleanup action in the DCAP.

[WAC 173-340-360(3)(d)]

Model Toxics Control Act Cleanup Regulation



Minimum Requirements for Cleanup Actions

PERMANENT TO THE MAXIMUM EXTENT PRACTICABLE

❖ What constitutes a “permanent cleanup action”?

A “permanent cleanup action” is an action in which cleanup standards can be met without further action being required at the site being cleaned up or any other site involved with the cleanup action, other than the approved disposal of any residue from the treatment of hazardous substances.

[WAC 173-340-200]

Model Toxics Control Act Cleanup Regulation



Minimum Requirements for Cleanup Actions

PERMANENT TO THE MAXIMUM EXTENT PRACTICABLE

- ❖ May a cleanup action that includes soil containment as a component constitute a permanent cleanup action?

NO.

- ❖ May a cleanup action that includes natural attenuation as a component constitute a permanent cleanup action?

Maybe.

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Minimum Requirements for Cleanup Actions

PERMANENT TO THE MAXIMUM EXTENT PRACTICABLE

- ❖ **How does one conduct a disproportionate cost analysis?**
 - (1) Rank the cleanup action alternatives in the feasibility study from most to least permanent.
 - (2) Identify the costs and benefits of each cleanup action alternative.
 - (3) Using the most (practicable) permanent cleanup action alternative as the baseline, compare the costs and benefits of the baseline alternative with each of the less permanent cleanup action alternatives.

[WAC 173-340-360(3)(e)(ii)(A-B)]

Model Toxics Control Act Cleanup Regulation



Minimum Requirements for Cleanup Actions

PERMANENT TO THE MAXIMUM EXTENT PRACTICABLE

❖ How are the costs and benefits assessed?

“The comparison of costs and benefits may be quantitative, but will often be qualitative and require the use of best professional judgment. In particular, the department has the discretion to favor or disfavor qualitative benefits and use that information in selecting a cleanup action.”

[WAC 173-340-360(3)(e)(ii)(C)]

Model Toxics Control Act Cleanup Regulation



Minimum Requirements for Cleanup Actions

PERMANENT TO THE MAXIMUM EXTENT PRACTICABLE

❖ **What are the costs and benefits that must be evaluated?**

The evaluation criteria identified in WAC 173-340-360(3)(f).

- Degree of human health risk reduction
- Degree of environmental risk reduction
- Length of the restoration time frame
- Degree to which the toxicity, mobility and volume of hazardous substances are permanently reduced
- Degree of long-term effectiveness (certainty and reliability)
- Degree to which community concerns are addressed

Model Toxics Control Act Cleanup Regulation



Minimum Requirements for Cleanup Actions

PERMANENT TO THE MAXIMUM EXTENT PRACTICABLE

- ❖ **What are the costs and benefits that must be evaluated? (continued)**
 - Degree of short-term (remediation) risk
 - Degree to which short-term (remediation) risks are effectively managed
 - Degree of technical and administrative implementability
 - Cost to implement the alternative

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Minimum Requirements for Cleanup Actions

PERMANENT TO THE MAXIMUM EXTENT PRACTICABLE

- ❖ **What types of costs should be considered?**
 - Short-term costs (cost of construction)
 - Long-term costs (net present value)
 - Agency oversight costs that are cost recoverable

- ❖ **What types of long-term costs should be considered?**
 - Operation and maintenance costs
 - Monitoring costs
 - Equipment replacement costs
 - Cost of maintaining institutional controls and financial assurances

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Minimum Requirements for Cleanup Actions

PERMANENT TO THE MAXIMUM EXTENT PRACTICABLE

- ❖ **What is the test for determining whether the costs of the baseline alternative are disproportionate to the benefits?**

The costs of the baseline alternative are disproportionate to the benefits IF the incremental costs of the baseline alternative over that of a lower cost alternative exceed the incremental degree of benefits achieved by the baseline alternative over that of the lower cost alternative.

[WAC 173-340-360(3)(e)(i)]

Model Toxics Control Act Cleanup Regulation

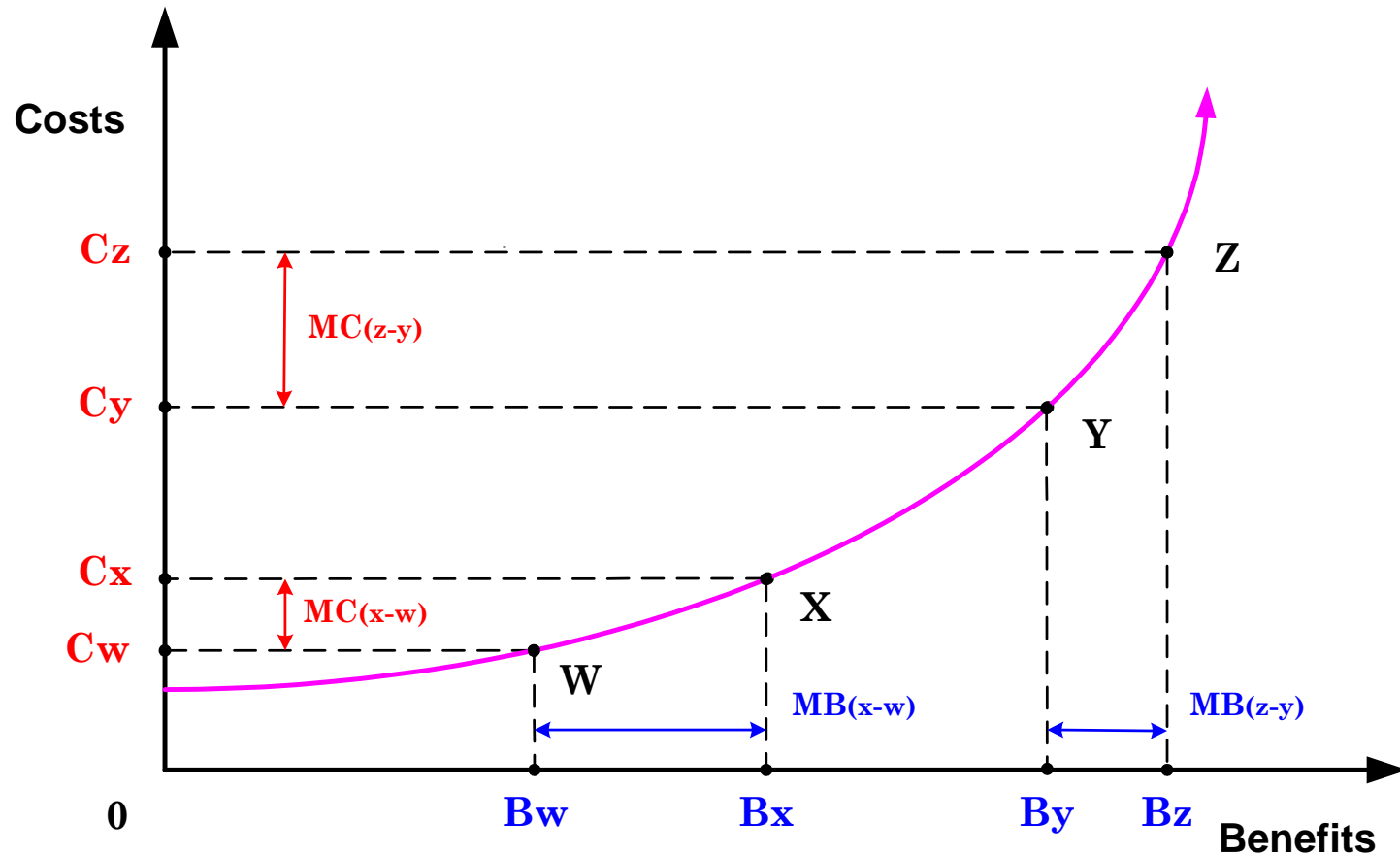


Minimum Requirements for Cleanup Actions

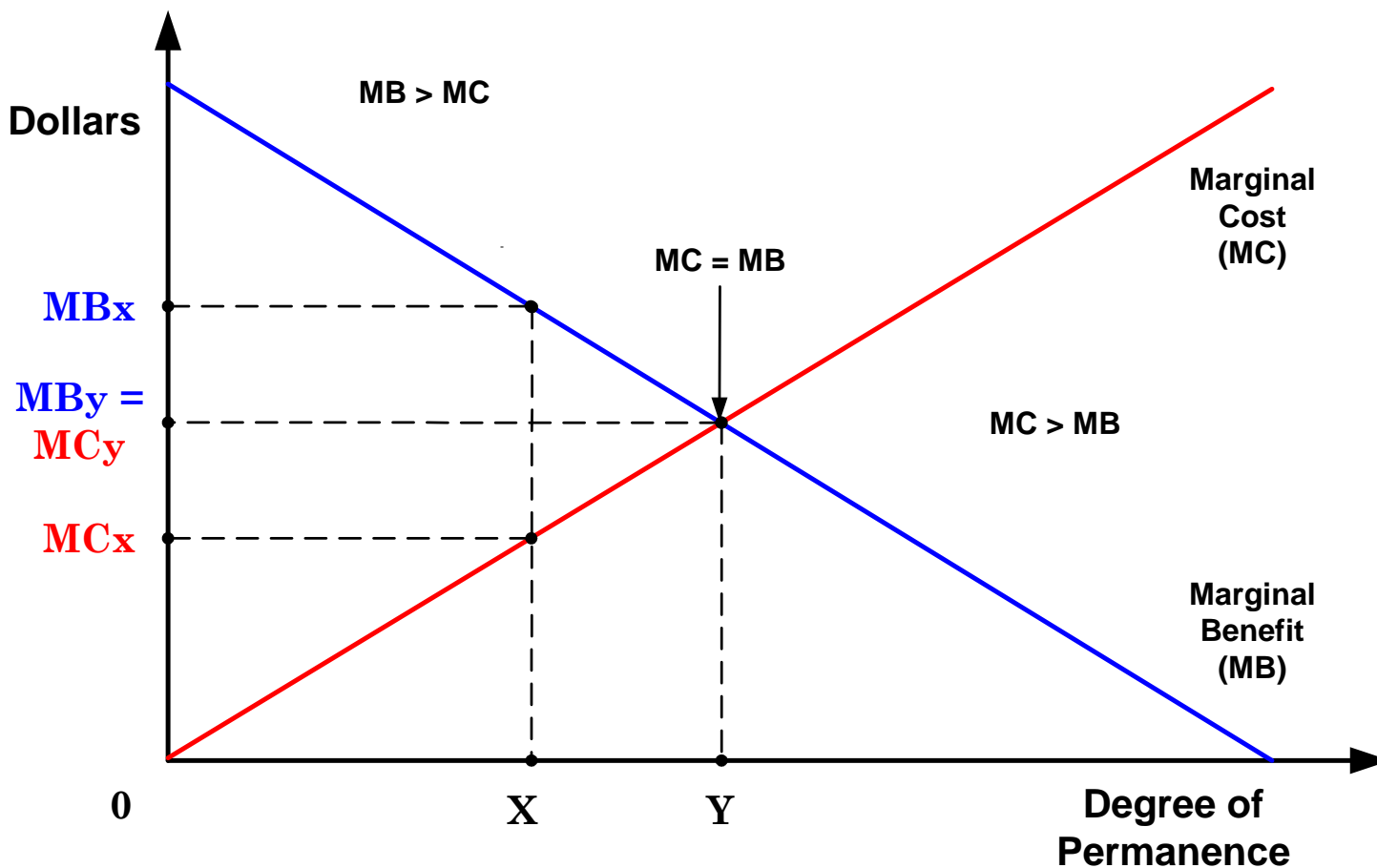
PERMANENT TO THE MAXIMUM EXTENT PRACTICABLE

- ❖ **Is the word “substantial” subsumed within the word “disproportionate”?**
YES. See Final PAC Report, p. C-48. The PAC did not intend to change the regulatory standard.
- ❖ **What does the term “substantial” add to “disproportionate”?**
“substantially disproportionate”, NOT “substantial and disproportionate”

Graphical Analysis of Costs and Benefits



Graphical Analysis of Costs and Benefits



Model Toxics Control Act Cleanup Regulation



Reasonable Restoration Time Frame

WAC 173-340-360(2)(b)(ii)



WAC 173-340-360(4)

Model Toxics Control Act Cleanup Regulation



Minimum Requirements for Cleanup Actions

REASONABLE RESTORATION TIME FRAME

- ❖ **How does one determine whether a cleanup action provides for a reasonable restoration time frame?**

The nine factors specified in the rule are used to determine whether a cleanup action provides for a reasonable restoration time frame.

[WAC 173-340-360(4)(b)]

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Ground Water Cleanup Actions

WAC 173-340-360(2)(c)

Model Toxics Control Act Cleanup Regulation



Minimum Requirements for Cleanup Actions

GROUND WATER CLEANUP ACTIONS

❖ Is a permanent ground water cleanup action required?

A permanent action is required to achieve cleanup levels at the standard point of compliance IF:

____ (1) practicable OR

____ (2) determined by Ecology to be in the public interest.

[WAC 173-340-360(2)(c)(i)]

Model Toxics Control Act Cleanup Regulation



Minimum Requirements for Cleanup Actions

GROUND WATER CLEANUP ACTIONS

- ❖ **What are the minimum requirements for nonpermanent ground water cleanup actions?**
 - (1) Treatment or removal of the source is required IF the site contains:
 - liquid wastes
 - areas contaminated with high concentrations of hazardous substances
 - highly mobile hazardous substances
 - hazardous substances that cannot be reliably contained.
 - (2) Ground water containment must be implemented to the maximum extent practicable.

[WAC 173-340-360(2)(c)(ii)]

Model Toxics Control Act Cleanup Regulation



Soil Cleanup Actions

WAC 173-340-360(2)(d)

Model Toxics Control Act Cleanup Regulation



Minimum Requirements for Cleanup Actions

SOIL CLEANUP ACTIONS

- ❖ **When is treatment, removal, and/or containment required?**
 - (1) For current OR potential future residential areas
 - (2) For schools and child care centers
- ❖ **When does a property qualify as a current or potential residential area?**
 - (1) The property is currently used for residential use
 - (2) The property has the potential to serve as a future residential area based on several factors specified in the rule (e.g., zoning).

[WAC 173-340-360(2)(d)]

Model Toxics Control Act Cleanup Regulation



Dilution and Dispersion

WAC 173-340-360(2)(g)

Model Toxics Control Act Cleanup Regulation



Minimum Requirements for Cleanup Actions

DILUTION AND DISPERSION

- ❖ **May a cleanup action rely primarily on dilution and dispersion?**

NO, UNLESS the incremental cost of any **active remedial measures** over the costs of dilution and dispersion **grossly exceed** the incremental degree of benefits of active remedial measures over the benefits of dilution and dispersion.

[WAC 173-340-360(2)(e)]

Model Toxics Control Act Cleanup Regulation



Minimum Requirements for Cleanup Actions

DILUTION AND DISPERSION

- ❖ **Under what circumstances may “natural attenuation” constitute an “active remedial measure”?**

A cleanup action that includes natural attenuation and conforms to the expectation in WAC 173-340-370(7) may be considered an active remedial measure.

[WAC 173-340-200 and 173-340-370(7)]

Model Toxics Control Act Cleanup Regulation



Institutional Controls

WAC 173-340-360(2)(e)



WAC 173-340-440

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Minimum Requirements for Cleanup Actions

INSTITUTIONAL CONTROLS

- ❖ **When are institutional controls required?**
 - (1) The cleanup level is established using Method A or B and hazardous substances remain at the site at concentrations that exceed the applicable cleanup level.
 - (2) The cleanup level is established using Method C.
 - (3) An industrial soil cleanup level is established under Section 745.

Model Toxics Control Act Cleanup Regulation



Minimum Requirements for Cleanup Actions

INSTITUTIONAL CONTROLS

- ❖ **When are institutional controls required? (continued)**
 - (4) A ground water cleanup level is established using a site-specific risk assessment under WAC 173-340-720(6)(c) AND the cleanup level exceeds the potable ground water cleanup level AND institutional controls are required under WAC 173-340-720(6)(c)(iii).
 - (5) A conditional point of compliance is established.
 - (6) An institutional control is required based on the terrestrial ecological evaluation conducted for the site.

Model Toxics Control Act Cleanup Regulation



Minimum Requirements for Cleanup Actions

INSTITUTIONAL CONTROLS

- ❖ **When are institutional controls required? (continued)**
 - (7) Ecology determines that institutional controls are required to ensure the continued protection of human health and the environment OR the integrity of the cleanup action.

[WAC 173-340-360(2)(e)(i) and 173-340-440(4)]

Model Toxics Control Act Cleanup Regulation



Minimum Requirements for Cleanup Actions

INSTITUTIONAL CONTROLS

- ❖ **What are the minimum requirements for cleanup actions that use institutional controls?**

Cleanup action that use institutional controls must meet each of the minimum requirements specified in WAC 173-340-360.

Institutional controls should demonstrably reduce risks to ensure a protective remedy. This demonstration should be based on a quantitative, scientific analysis where appropriate.

[WAC 173-340-360(2)(e)(iii) and 173-340-440(6)]

Model Toxics Control Act Cleanup Regulation



Minimum Requirements for Cleanup Actions

INSTITUTIONAL CONTROLS

- ❖ May a cleanup action rely primarily on institutional controls?

NO, UNLESS it is not technically possible to implement a more permanent cleanup action for all or part of the site.

[WAC 173-340-360(2)(e)(iii) and 173-340-440(6)]

Model Toxics Control Act Cleanup Regulation



Minimum Requirements for Cleanup Actions

INSTITUTIONAL CONTROLS

- ❖ **Is a periodic review required at sites where institutional controls are required as part of the cleanup action?**

YES.

- ❖ **How are institutional controls evaluated as part of the periodic review?**

Ecology must determine whether institutional controls have been implemented and whether they have been effective in limiting exposure to hazardous substances remaining at the site.

[WAC 173-340-440(7) and 173-340-420(2)(a), (4)(a)]

Model Toxics Control Act Cleanup Regulation



Minimum Requirements for Cleanup Actions

INSTITUTIONAL CONTROLS

- ❖ **For properties owned by a local, state, or federal government entity, is a restrictive covenant always required?**

NO. A restrictive covenant is not required IF that entity demonstrates:

- (1) It does not routinely file with the county recording officer records relating to the type of interest in real property that it has in the site
- (2) It will implement an effective alternative system.

[WAC 173-340-440(8)(b)]

Model Toxics Control Act Cleanup Regulation



Minimum Requirements for Cleanup Actions

INSTITUTIONAL CONTROLS

- ❖ For properties near the source of release not owned by a PLP, is a restrictive covenant always required?

NO. A restrictive covenant is not required IF the PLP makes a good faith effort to obtain a restrictive covenant and fails. In that case, other legal or administrative mechanisms may be used.

[WAC 173-340-440(8)(c)]

Model Toxics Control Act Cleanup Regulation



Minimum Requirements for Cleanup Actions

FINANCIAL ASSURANCES

❖ **What are financial assurances?**

Financial assurance constitute an “insurance policy” to ensure the long-term effectiveness of engineered and institutional controls.

Financial assurances may be required to cover the costs of one or more of the following:

- (1) Operation and maintenance
- (2) Compliance monitoring
- (3) Corrective measures (should the remedial action fail).

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Minimum Requirements for Cleanup Actions

FINANCIAL ASSURANCES

❖ When are financial assurances required?

“Ecology shall, as appropriate, require financial assurance mechanisms at site where the cleanup action selected includes engineered and/or institutional controls.”

[WAC 173-340-440(11)]

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Minimum Requirements for Cleanup Actions

FINANCIAL ASSURANCES

❖ Are there specific exemptions from the requirement? YES

(1) **Low Income Exemption** → WAC 173-340-440(11)(b)

NOT required IF the requirement would “result in the PLPs for the site having insufficient funds to conduct the cleanup or being forced into bankruptcy or similar financial hardship”

(2) **High Income Exemption** → WAC 173-340-440(11)

NOT required IF sufficient financial resources are available and in place to provide for the long-term effectiveness of engineered controls and institutional controls adopted

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Minimum Requirements for Cleanup Actions

FINANCIAL ASSURANCES

❖ What financial assurance mechanisms may be used?

- Trust fund
- Surety bond
- Letter of credit
- Financial test
- Guarantee
- Standby trust fund
- Government bond rating test
- Government financial test
- Government guarantee
- Government fund
- Other

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Remediation Levels

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Remediation Levels - Definition

"Remediation level" means a concentration (or other method of identification) of a hazardous substance in soil, water, air, or sediment above which a particular cleanup action component will be required as part of a cleanup action at a site. Other methods of identification include physical appearance or location.

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Remediation Levels - Relationship to Cleanup Standards

- ❖ **Cleanup actions** consist of one or more **cleanup action components**.
- ❖ **Cleanup actions** must comply with **cleanup standards**.
- ❖ **Cleanup standards** consist of a protective concentration (**cleanup level**) and the location within the contaminated medium where the cleanup level must be met (**point of compliance**).
- ❖ **Remedial actions** that do not achieve cleanup standards are **interim actions**, not **cleanup actions**.

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Remediation Levels - Relationship to Cleanup Standards

- ❖ **Cleanup levels** define the concentration of hazardous substances above which a contaminated medium (e.g., soil) must be remediated in some manner (e.g., soil treatment or containment).
- ❖ **Remediation levels** define the concentration (or other method of identification) of a hazardous substance in a particular medium above or below which a particular cleanup action component (e.g., soil treatment or containment) will be used.
- ❖ Remediation levels, by definition, exceed cleanup levels.

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Remediation Levels - Development

- ❖ **Quantitative or qualitative methods** may be used.
- ❖ **Human health or ecological risk assessments** may be used.
- ❖ IF a quantitative human health risk assessment is used, THEN see WAC 173-340-357 and 173-340-708(3)(d) and (10)(b).

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Remediation Levels - Purpose

A cleanup action selected for a site will often involve a combination of cleanup action components. Remediation levels are used to identify the concentrations (or other methods of identification) of hazardous substances at which different cleanup action components will be used.

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Remediation Levels - Purpose

CLEANUP ACTIONS

- ❖ Remediation levels are used at sites where a combination of cleanup action components are used to achieve cleanup levels at the point of compliance.
- ❖ Remediation levels are used at sites where the cleanup action involves the **containment of soils** as provided under **WAC 173-340-740(6)(f)**.
Where a cleanup action involves containment of soils with hazardous substance concentrations exceeding cleanup levels at the point of compliance, the cleanup may be determined to comply with cleanup standards, provided the requirements in WAC 173-340-740(6)(f) are met.

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Remediation Levels - Purpose

INTERIM ACTIONS

- ❖ Remediation levels are used at sites where a combination of remedial actions are used to conduct an interim action.

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Remediation Levels - Example #1

SITE MEETING **SOIL** CLEANUP LEVELS AT POC

Cleanup Standard

- ❖ Soil cleanup level = 20 ppm
- ❖ Point of compliance = soils throughout the site from the ground surface to 15 feet
- ❖ Under the cleanup standard, any soil that exceeds the 20 ppm cleanup level at the point of compliance must be remediated in some manner.

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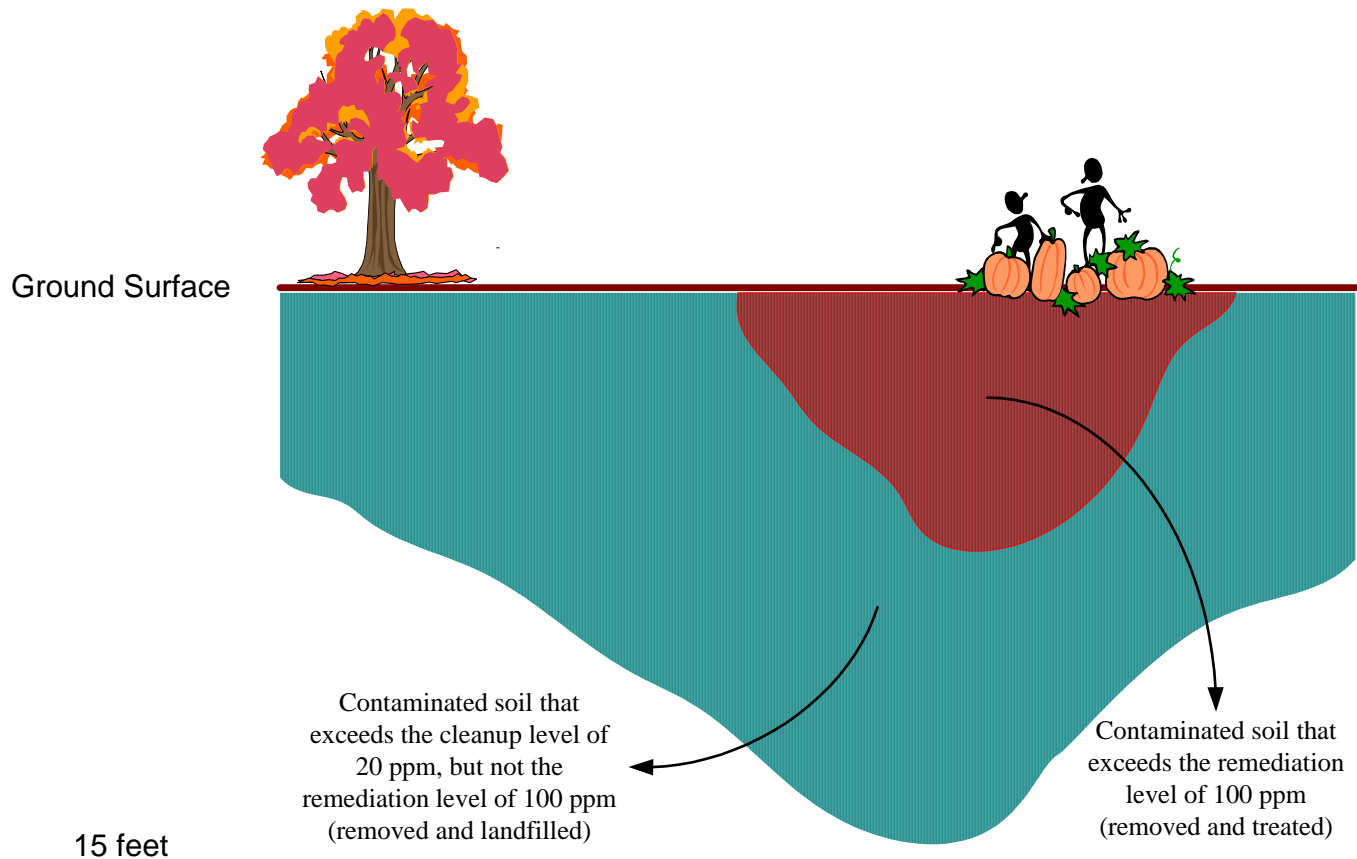
Remediation Levels - Example #1 (continued)

SITE MEETING **SOIL** CLEANUP LEVELS AT POC

Cleanup Action

- ❖ Cleanup action components = soil treatment and soil removal
- ❖ Remediation level of 100 ppm is used to define where those two components are used
- ❖ Under the cleanup action, any soil that exceeds the 100 ppm remediation level must be removed and treated. Any soil that does not exceed the 100 ppm remediation level, but does exceed the 20 ppm cleanup level, must be removed and landfilled.

Conceptual Depiction of Example #1



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Remediation Levels - Example #1 (continued)

SITE MEETING **SOIL** CLEANUP LEVELS AT POC

Does the cleanup action comply with the soil cleanup standard? YES

- ❖ The cleanup action involves the cleanup of all soils with hazardous substance concentrations exceeding the cleanup level at the point of compliance.
- ❖ As long as the soil cleanup level of 20 ppm is met at the point of compliance (throughout the site from the ground surface to 15 feet), the cleanup action may be determined to comply with the soil cleanup standard.

Model Toxics Control Act Cleanup Regulation



Remediation Levels - Example #2

SITE NOT MEETING SOIL CLEANUP LEVELS AT POC

Cleanup Standard

- ❖ Soil cleanup level = 20 ppm
- ❖ Point of compliance = soils throughout the site from the ground surface to 15 feet
- ❖ Under the cleanup standard, any soil that exceeds the 20 ppm cleanup level at the point of compliance must be remediated in some manner.

Model Toxics Control Act Cleanup Regulation



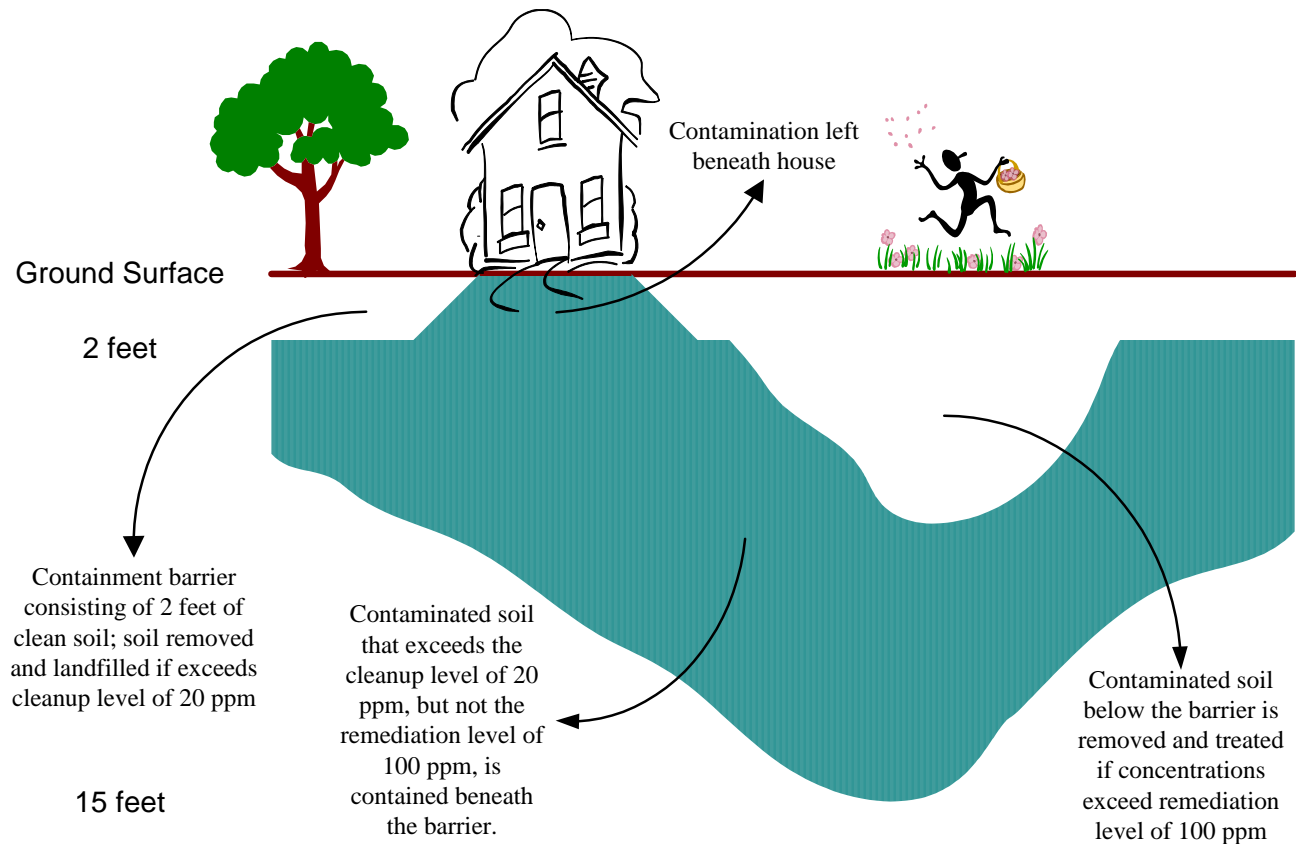
Remediation Levels - Example #2 (continued)

SITE **NOT** MEETING **SOIL** CLEANUP LEVELS AT POC

Cleanup Action

- ❖ Cleanup action components = soil treatment and soil containment
- ❖ Remediation level of 100 ppm is used to define where those two components are used
- ❖ Under the cleanup action, any soil that exceeds the 100 ppm remediation level must be treated. Any soil that does not exceed the 100 ppm remediation level, but does exceed the 20 ppm cleanup level, must be contained under a physical barrier.

Conceptual Depiction of Example #2



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Remediation Levels - Example #2 (continued)

SITE NOT MEETING **SOIL CLEANUP LEVELS AT POC**

Does the cleanup action comply with the soil cleanup standard? MAYBE

- ❖ The cleanup action involves containment of soils with hazardous substance concentrations exceeding cleanup levels at the point of compliance. Residual contamination above the cleanup level will therefore remain at the site.
- ❖ **However**, the cleanup action **may be determined to comply** with the soil cleanup standard **provided** the cleanup action meets the requirements specified in **WAC 173-340-740(6)(f)** for soil containment actions.

Model Toxics Control Act Cleanup Regulation



Remediation Levels - Example #3

SITE MEETING **GROUND WATER** CLEANUP LEVELS AT POC

Cleanup Standard

- ❖ Ground water cleanup level = 500 ug/l
- ❖ Point of compliance = conditional POC at the property boundary
- ❖ Under the cleanup standard, any ground water that exceeds the 500 ug/l cleanup level at the point of compliance must be remediated in some manner.

Model Toxics Control Act Cleanup Regulation



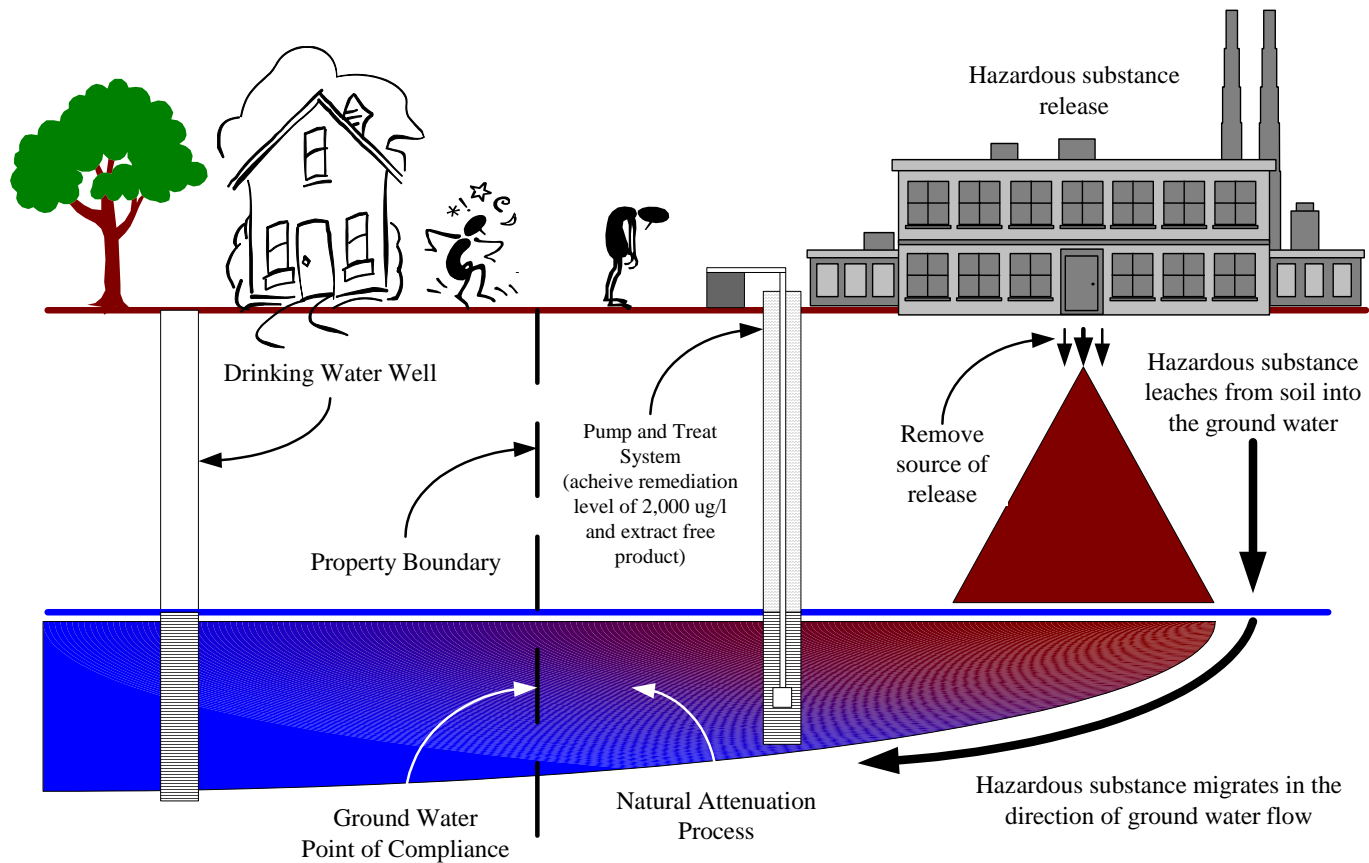
Remediation Levels - Example #3 (continued)

SITE MEETING **GROUND WATER** CLEANUP LEVELS AT POC

Cleanup Action

- ❖ Cleanup action components =
 1. Removing the source of the ground water contamination
 2. Extracting free product and any ground water exceeding a concentration of 2,000 ug/l; and
 3. Utilizing natural attenuation to restore the ground water to 500 ug/l before it arrives at the property boundary.
- ❖ The ground water concentration of 2,000 ug/l constitutes a remediation level because it defines the concentration of a hazardous substance at which different cleanup action components are used.

Conceptual Depiction of Example #3



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Remediation Levels - Example #3 (continued)

SITE MEETING **GROUND WATER** CLEANUP LEVELS AT POC

Does the cleanup action comply with the GW cleanup standard? YES

- ❖ The cleanup action involves the cleanup of ground water to the extent that the concentration of the hazardous substance will not exceed the cleanup level at the point of compliance (the property boundary).
- ❖ As long as the 500 ug/l ground water cleanup level is met at the point of compliance (the property boundary), the cleanup action may be determined to comply with the ground water cleanup standard.

Model Toxics Control Act Cleanup Regulation



Remediation Levels - Example #4

SITE NOT MEETING **GROUND WATER CLEANUP LEVELS AT POC**

Cleanup Standard

- ❖ Ground water cleanup level = 5 ug/l
- ❖ Point of compliance = conditional POC at the property boundary
- ❖ Under the cleanup standard, any ground water that exceeds the 5 ug/l cleanup level at the property boundary must be remediated in some manner.

Model Toxics Control Act Cleanup Regulation



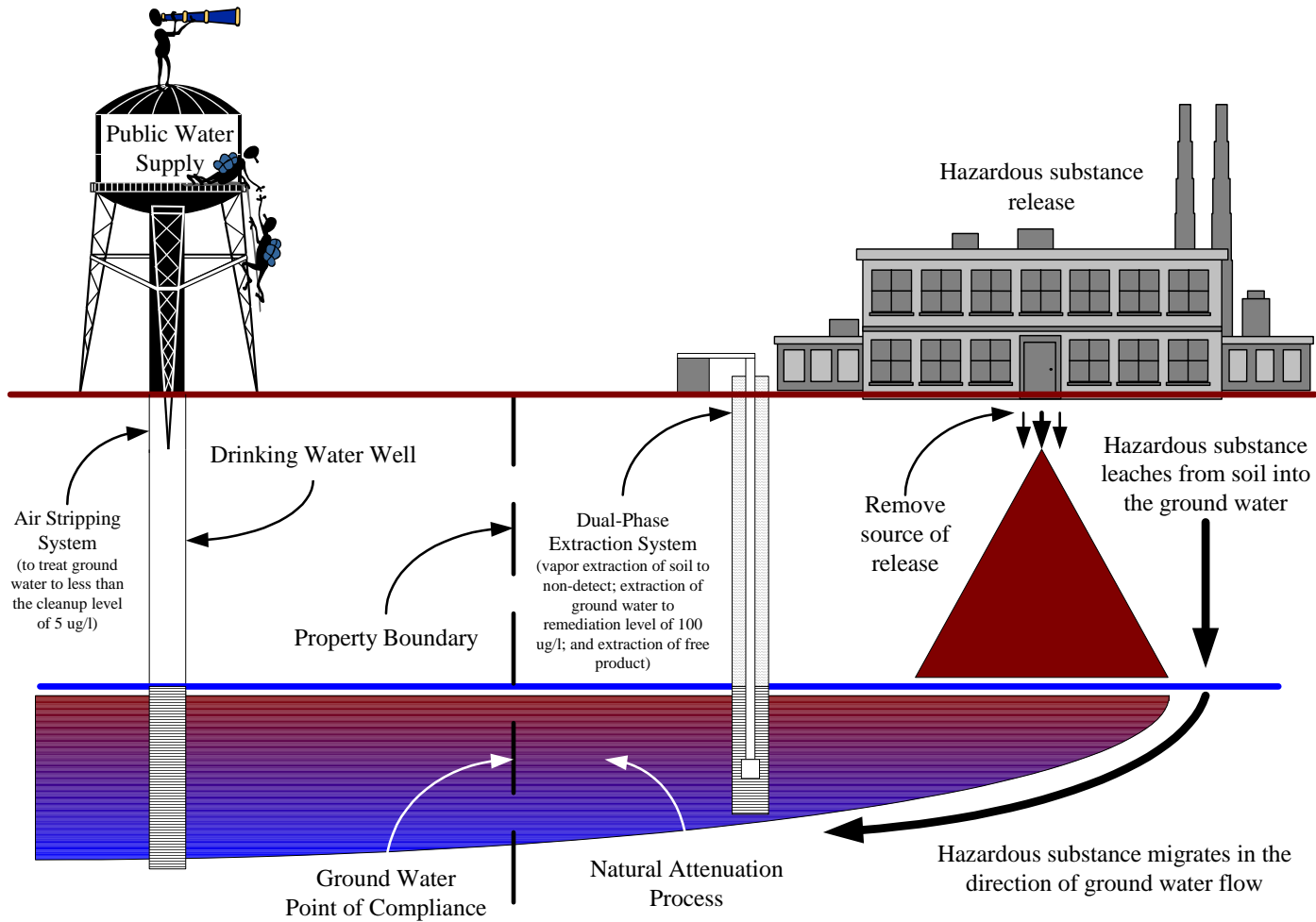
Remediation Levels - Example #4 (continued)

SITE **NOT** MEETING **GROUND WATER** CLEANUP LEVELS AT POC

Interim Action

- ❖ Cleanup action components =
 1. Vapor extraction of the soil to non-detectable concentrations (to prevent further ground water contamination);
 2. Extraction and treatment of ground water with concentrations in excess of 100 ug/l; and
 3. Installation of an air stripping system to treat ground water at a water supply well beyond the property boundary to less than 5 ug/l.
- ❖ The ground water concentration of 100 ug/l constitutes a remediation level because it defines the concentration of a hazardous substance at which different cleanup action components are used.

Conceptual Depiction of Example #4



Model Toxics Control Act Cleanup Regulation



Remediation Levels - Example #4 (continued)

SITE **NOT** MEETING **GROUND WATER** CLEANUP LEVELS AT POC

Does the interim action comply with the GW cleanup standard? NO

- ❖ The interim action only partially addresses the cleanup of the site and involves measures necessary to reduce a threat to human health.
- ❖ The interim action does not comply with the ground water cleanup standard because the ground water cleanup level will not be met at the conditional point of compliance (the property boundary).
- ❖ NOTE: An interim action may constitute a cleanup action for a site if the interim action is subsequently shown to comply with the minimum requirements for a cleanup action, including compliance with cleanup standards.

Model Toxics Control Act Cleanup Regulation



Model Remedies

Model Toxics Control Act Cleanup Regulation



Model Remedies - Definition and Purpose

Model remedies are remedial actions for specified categories of sites that may be used under specified circumstances as the cleanup action or components of a cleanup action for a site.

Model remedies are used to streamline and accelerate the selection of cleanup actions that protect human health and the environment and otherwise meet the minimum requirements for cleanup actions.

Model Toxics Control Act Cleanup Regulation



Model Remedies - Development

- ❖ Ecology has the authority to identify model remedies for categories of sites.
- ❖ Model remedies are identified for categories of sites based on one or more site characteristics, including:
 1. The type of facility (e.g., commercial gas stations);
 2. The type of contamination; and
 3. The type of media contaminated.
- ❖ When identifying a model remedy, Ecology must identify the criteria for determining whether the model remedy may be selected as part of the cleanup action for a site.

Model Toxics Control Act Cleanup Regulation



Model Remedies - Application

- ❖ IF a site meets the specified criteria for use of the model remedy, THEN the model remedy may be selected as the cleanup action or a component of the cleanup action for the site.
- ❖ IF a model remedy meets the specified criteria and is selected as part of the cleanup action, THEN for that part of the cleanup action to which the model applies, the following is not required:
 1. A feasibility study under WAC 173-340-350(8); and
 2. A disproportionate costs analysis under WAC 173-340-360(3).
- ❖ NOTE: The draft cleanup action plan is still subject to the same public notice and participation requirements.

Model Toxics Control Act Cleanup Regulation



Model Remedies - Public Notice and Participation

- ❖ **Development of Model Remedies:** The department must provide for an opportunity for the public to review and comment on any proposed model remedies. See WAC 173-340-390(2). If a model remedy is developed through a rule-making action, then the requirements under the Administrative Procedure Act apply.
- ❖ **Application of Model Remedies:** Even if a model remedy is selected as the proposed cleanup action or as part of the proposed cleanup action for a site, the department must still issue a draft cleanup action plan for the site and that plan is still subject to the same public notice and participation requirements as for any other site. See WAC 173-340-390(4) and 173-340-380.

Model Toxics Control Act Cleanup Regulation



Model Remedies - Current Developments

COMMERCIAL GAS STATIONS

- ❖ Guidance on the characterization of the site **Ongoing**
 - 1. To define the nature and extent of contamination
 - 2. To define site-specific parameters (e.g., foc and DF)
- ❖ Guidance on the development of site-specific cleanup levels **Ongoing**
 - 1. Specify and describe methods for defining site-specific parameters
 - 2. Provide workbook tools for calculating cleanup levels
- ❖ Guidance on remedial technologies **Coming Soon**
- ❖ Development of natural attenuation policy **Coming Soon**
- ❖ Development of model remedies **Future**